House-flies in the Philippines.

I remember, years ago, seeing a dried specimen of the house-fly sent to Boston in a letter as a great rarity there, — the only one the sender had seen in a year's residence in Manila. As this is one of the constant accompaniments of man, and a sure sign of his presence or vicinity, I was at a loss to account for its absence. It is not even found in the sugar-yards in any great numbers. I now see why it should be so rare; viz., because it could not of itself pass over the six hundred miles of the windy China sea; and the few which might be transported on vessels, if they got ashore from their distant anchorage, would be prevented from multiplying by their numerous enemies, — bats, spiders, birds, lizards, and other reptiles. Some days I would not see one, and rarely more than two, around the table. Were they common, with the other insect-pests, life would be almost unendurable in these islands. S. KNEELAND.

Solar corona.

Various reasons have been assigned for the very conflicting representations of the corona made by observers who have simultaneously sketched it. It seems to me that the principal cause of the very puzzling differences observed lies in the fact that the light of the corona falls so near the limit of visibility at the violet end of the spectrum as to excite the retina in different observers unequally.

I would have each observer tested for color-blindness in the part of the spectrum between G and H; and no doubt as great differences would be found in the sensitiveness of different eyes near the upper limits of visibility as is known to exist in different ears in perceiving sounds near the upper limit of audibility. Only those sketches of the corona could be properly compared with each other which were made by observers to whom the relative intensity of the various parts of the spectrum appeared approximately the same. H. T. EDDY.

Badly crystallized wrought iron.

An iron contractor told me, the other day, that he was called as an expert in a case where the wrought-iron strap of the walking-beam of a steamboat broke, and injured some one. The broken strap (about four by eight inches in section, I think) was shown, and the interior found to be very badly crystallized, — the worst case, my friend said, he ever saw. The exterior was of fair, ordinary texture. Afterwards, a part of the strap was cut off, sawn lengthwise into bars, and tested for tensile strength. All portions were rather weak, the highest resistance being but 36,000 pounds; but the inner sections, where the iron was worst crystallized, were the strongest of all.

Does any one know more about this case or any similar one? T. M. CLARK.

178 Devonshire Street, Boston, March 2.

WHITNEY'S CLIMATIC CHANGES.[1]

II.

IN the first part of this article the contents of the volume were described: the author's principal conclusions will now be discussed.

THE CAUSE OF THE GLACIAL EPOCH.

Professor Whitney's fundamental postulate, that the general temperature of the atmosphere is due to heat from the sun, is beyond controversy. His hypothesis that the intensity of solar radiation is gradually lessening, by reason of the dissipation of solar energy, and that the paleontologic record in arctic and temperate regions is in close sympathy with this lessening, will be admitted by most students. But when he asserts that the degradation of terrestrial climate has been continuous and uninterrupted, the glacial epoch notwithstanding, assent will not so readily be yielded. The idea that the glacial epoch was characterized by exceptional cold is all but universally entertained, and is so plausible on its face that it can be displaced only by cogent reasoning.

He advances two lines of argument, — first, that the phenomena of the glacial epoch were produced entirely by local causes, such as the elevation of mountains and the submergence of plains; second, that they belonged in the natural order of things to a warmer stage of the earth's climate, and have disappeared by reason of the secular degradation of climate. These two explanations are not clearly recognized as distinct, but are appealed to indiscriminately in the course of a somewhat desultory discussion; the one being more commonly called upon to account for the appearance of glaciers, and the other for their disappearance. If temporary local changes are competent to produce local glaciation, they would seem to be equally competent to terminate it; and a secular cause need not be appealed to. If, on the other hand, the glaciation of quaternary time has been actually abated by a secular change of temperature, it would seem logical to refer its inauguration also to a secular change.

The first line of argument is developed chiefly in a discussion of the distribution of glaciers, modern and ancient, with reference to local conditions. This is full of profitable suggestion; and it is hard to see how any one who has weighed the considerations therein adduced can entertain the hypothesis of a polar ice-cap. It appears beyond question, that the only work accomplished by the introduction of any conditions of a general nature favorable to glaciation would be the enlargement of existing glaciers, and the institution of limited ice-sheets in favorable localities. This, however, is a question of *a priori* possibilities: it is quite another matter to determine whether local conditions can be made to account for the ancient magnitude of glaciers. Whitney tells us that they can; but the only ancient ice-sheet he seriously undertakes to ex-

[1] Continued from No. 5.